

## ORNITHOLOGICAL LITERATURE

ANNUAL CYCLE, ENVIRONMENT, AND EVOLUTION IN THE HAWAIIAN HONEYCREEPERS (AVES: DREPANIIDAE). By Paul H. Baldwin. University of California Publications in Zoology, Volume 52, Number 4, October 28, 1953: pp. 285-398, pls. 8-11, figs. 1-12.  $6\frac{3}{4} \times 10\frac{1}{4}$  in. \$1.50.

Here is a study, complementary to that by Amadon (1950. *Bull. Amer. Mus. Nat. Hist.*, 95:151-262), which places us another step ahead in our understanding of a most fascinating group. This author has, in principle, accepted and followed Amadon's taxonomic revision of the Drepaniidae. With only passing mention of most forms, he has concentrated on a comparative ecological study of certain species which still persist in numbers.

Baldwin spent extended periods in and near the Hawaiian forests over a span of twelve years, 1937 to 1949. It is evident that prior to his final year of intensive work there was opportunity, not only to gather a great many preliminary and corroboratory data, but to plan carefully the several lines of later investigation. The resulting study impresses this reader as unusually coherent. Although acquainted with 13 forms of living drepaniids, Baldwin confined his efforts largely to 3: *Vestiaria coccinea*, *Himatione sanguinea sanguinea*, and *Loxops virens virens*, all of which are still numerous in the Hawaii National Forest and elsewhere. Study plots were established at various elevations on the volcano slopes, mostly within the park. Local temperature and rainfall measurements, studies of vegetation types, censuses of bird populations, checks on the bloom of flowering trees, collections of tree-inhabiting invertebrates, and special observations on the three honeycreeper species mainly concerned, were carried on more or less concurrently along the transect formed by the plots. Numerous specimens were collected at intervals during the same period, from the forests closely adjacent, for study of molt, weight changes, gonadal cycles, skull development, and stomach contents.

Some new interpretations of molt-sequence are presented (see also Baldwin, 1952. *Auk*, 69:92-98), the result of very thorough and systematic comparisons. A number of interesting ideas on adaptation and past evolution within the family are evolved from the analyses of present-day factors. The main contribution, however, is the discussion of the three species as living populations: their territorial behavior, breeding cycles, habitat preference, utilization of nectar and of animal food, seasonal movements, and adaptation to the island environment in general. This is stimulating and refreshing; it is encouraging that studies not made when the Hawaiian honeycreepers were at their peak of abundance, can yet be accomplished for at least a few species that are holding their own. The close relationship between the birds and the flowering trees *Sophora* and *Metrosideros*, though long an accepted fact, is here discussed in concrete terms. It is disturbing to note that two of the three species of birds showed a decrease in numbers during the total period of the investigations, and that it could be correlated in part with the spread of the introduced white-eye (*Zosterops*) in the area. A glance at the census figures shows at once the extent to which various exotic species have invaded even these relatively remote forests: they represent exactly half of the 22 species recorded on the plots.

Some might take issue with the suggestion that color and pattern in the drepaniids are largely nonadaptive (a point upon which the author himself seems to have rather divided feelings), while song (as a social releaser) is conceded to be, in a sense, adaptive. Momentary annoyance may be caused by such laxities as the continued use of "juvenal" as a noun, and repeated lumping of spiders and mites with "insects." But all of the factual material and analyses appear to be sound, and the inferences, in the main, well

founded. The whole work is attractive and readable, the photographs good, the graphs and tables clear, and the typographical errors very few. From many points of view, the paper is well worth a reader's perusal.—WILLIAM A. LUNK.

## LAND USE AND OUR AVIFAUNA

*A contribution from the Wilson Ornithological Club  
Conservation Committee*

American ornithologists have enjoyed a luxury impossible in long settled countries. We came upon a continent in which the fauna and flora were practically unaltered by man. We have had the opportunity to observe and study birds in virtually primeval conditions, and though we have lost some species by the settlement of the country, we still have available some wilderness with its original inhabitants.

It must be generally accepted now that our conservation efforts rest on land use planning. A striking problem of this kind is the future of our sage grouse. They are fairly plentiful in the western plains and are hunted as a game bird, and as you drive through the miles of sage country, it may seem that they are safe enough.

But big things are happening. There is a program of sage elimination using herbicides from airplanes. I have seen large areas treated in this way, for the purpose of encouraging grass free from competition of sage. Furthermore, the reclamation program is putting large sage areas under irrigation and hence cultivation. If the sage goes, the sage grouse go, for these birds are essentially browsers and depend on sage leaves for winter survival. Dr. Robert Patterson's exhaustive study of the stage grouse (1952. "The Sage Grouse in Wyoming," Wyoming Game and Fish Commission), clearly outlines the survival requirements of this bird and suggests an economy pattern for certain western areas that would insure the survival of the species.

Nearly 20 years ago, with several associates, I had opportunity to study the fauna of the Aleutian Islands, on behalf of the U.S. Fish and Wildlife Service. We found that some cackling geese still nested on a few of the islands, but the big migration that used to come east and south from the Aleutians was nearly ended. Part of the destruction may have been by extensive shooting in autumn in the Pacific Coast states. But another vital reason was the fact that most of the islands had been leased for blue fox farming. Foxes were simply turned loose to multiply, and were trapped occasionally for the market. We recommended that Agattu Island, especially, and several others which contained good breeding areas, should be cleared of all blue foxes, in the hope that the remnant of this goose population, and the *migration to and from* the Aleutians, might be saved. Then came the war, and I do not know whether the foxes were ever removed.

We need to give serious attention to the problem of land use. To survive, an animal must have a place to live. There is today a hopeful movement to preserve areas in the original state. We have a system of national parks and wilderness areas. And the Nature Conservancy is concerned with preserving the smaller natural areas. There are state parks and wildlife refuges. As was stressed at one of the discussions of the Mid-Century Conference on Resources for the Future at Washington last December, this whole system needs expansion.

But we are having great difficulty in retaining what we have. As these lines are written there is a proposal in Congress to include Echo Park dam in Dinosaur National Monument in the program for water development in Utah and Colorado, and we know that the dam builders have designs on Glacier National Park and that the lumbermen